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9. The method of claim 4, wherein said  $O_x$  generation cell comprises an  $O_x$  generator capable of generating  $O_x$  at a pressure of less than 20 lbs/in<sup>2</sup> selected from one or

1 more of the group consisting of corona discharge, high frequency electrical discharge,  
2 ultraviolet light, x-ray, radioactive isotopes and electron beam.

1 10. The method of claim 8, wherein said  $O_x$  in said biological burden reduction  
2 chamber is maintained at a concentration of about 0.1% to about 100% per total volume of  
3 gases in said biological burden reduction chamber.

1 11. The method of claim 10, wherein  $O_3$  in said biological burden reduction  
2 chamber is maintained at a concentration of about 0.1% to about 25% per total weight of  
3 gases in said biological burden reduction chamber.

1 12. The method of claim 11, wherein said  $O_3$  in said biological burden reduction  
2 chamber is maintained at a concentration of about 3% to about 16% per total weight of gases  
3 in said biological burden reduction chamber, wherein an amount of  $O_3$  used is dependent on  
4 said material.

1 13. The method of claim 8, further comprising maintaining a pressure differential  
2 between a pressure within said  $O_x$  generation chamber and a pressure within said biological  
3 burden reduction chamber sufficient to continuously withdraw said  $O_x$  through said  
4 biological burden reduction chamber.

1 14. The method of claim 8, further comprising using a biological burden  
2 reduction chamber of about 100 ft.<sup>3</sup> to about 8000 ft.<sup>3</sup>.

1 15. The method of claim 8, further comprising using a biological burden  
2 reduction chamber of about 1 ft.<sup>3</sup> to about 100 ft.<sup>3</sup>.

1 16. The method of claim 13, further comprising controlling water vapor present  
2 in said continuous stream of  $O_x$  prior to applying said continuous stream of  $O_x$  to said  
3 material.

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3 (b) a vacuum pump coupled to said biological burden reduction chamber;

(d) a first control valve coupled to said biological burden reduction chamber and said  $O_x$  generation cell, wherein said first control valve is capable of permitting said  $O_x$  to be withdrawn from said  $O_x$  generation cell into said biological burden reduction chamber; and

1            35.    The apparatus of claim 34, further comprising a member for creating forced  
2    air contained within said biological burden reduction chamber, wherein said forced air  
3    distributes said O<sub>2</sub> evenly throughout said biological burden reduction chamber.

1            37.    The apparatus of claim 34, further comprising a means for controlling water  
2    vapor coupled to said biological burden reduction chamber.

1           39. The method of claim 1, wherein said biological burden is selected from a  
2 group of living entities including insects, bacteria, viruses, algae, yeasts, molds, nematodes,  
3 parasites and weed seed.

1           40.    The apparatus of claim 36, further comprising a means to convert said O<sub>x</sub> to  
2   O<sub>2</sub> prior to release into atmosphere.

0603050708091011121314151617181920212223242526272829303132333435363738394041424344454647484950515253545556575859606162636465666768697071727374757677787980818283848586878889909192939495969798991001011021031041051061071081091101111121131141151161171181191201211221231241251261271281291301311321331341351361371381391401411421431441451461471481491501511521531541551561571581591601611621631641651661671681691701711721731741751761771781791801811821831841851861871881891901911921931941951961971981992002012022032042052062072082092102112122132142152162172182192202212222232242252262272282292302312322332342352362372382392402412422432442452462472482492502512522532542552562572582592602612622632642652662672682692702712722732742752762772782792802812822832842852862872882892902912922932942952962972982993003013023033043053063073083093103113123133143153163173183193203213223233243253263273283293303313323333343353363373383393403413423433443453463473483493503513523533543553563573583593603613623633643653663673683693703713723733743753763773783793803813823833843853863873883893903913923933943953963973983994004014024034044054064074084094104114124134144154164174184194204214224234244254264274284294304314324334344354364374384394404414424434444454464474484494504514524534544554564574584594604614624634644654664674684694704714724734744754764774784794804814824834844854864874884894904914924934944954964974984995005015025035045055065075085095105115125135145155165175185195205215225235245255265275285295305315325335345355365375385395405415425435445455465475485495505515525535545555565575585595605615625635645655665675685695705715725735745755765775785795805815825835845855865875885895905915925935945955965975985996006016026036046056066076086096106116126136146156166176186196206216226236246256266276286296306316326336346356366376386396406416426436446456466476486496506516526536546556566576586596606616626636646656666676686696706716726736746756766776786796806816826836846856866876886896906916926936946956966976986997007017027037047057067077087097107117127137147157167177187197207217227237247257267277287297307317327337347357367377387397407417427437447457467477487497507517527537547557567577587597607617627637647657667677687697707717727737747757767777787797807817827837847857867877887897907917927937947957967977987998008018028038048058068078088098108118128138148158168178188198208218228238248258268278288298308318328338348358368378388398408418428438448458468478488498508518528538548558568578588598608618628638648658668678688698708718728738748758768778788798808818828838848858868878888898908918928938948958968978988999009019029039049059069079089099109119129139149159169179189199209219229239249259269279289299309319329339349359369379389399409419429439449459469479489499509519529539549559569579589599609619629639649659669679689699709719729739749759769779789799809819829839849859869879889899909919929939949959969979989991000100110021003100410051006100710081009101010111012101310141015101610171018101910201021102210231024102510261027102810291030103110321033103410351036103710381039104010411042104310441045104610471048104910501051105210531054105510561057105810591060106110621063106410651066106710681069107010711072107310741075107610771078107910801081108210831084108510861087108810891090109110921093109410951096109710981099110011011102110311041105110611071108110911101111111211131114111511161117111811191120112111221123112411251126112711281129113011311132113311341135113611371138113911401141114211431144114511461147114811491150115111521153115411551156115711581159116011611162116311641165116611671168116911701171117211731174117511761177117811791180118111821183118411851186118711881189119011911192119311941195119611971198119912001201120212031204120512061207120812091210121112121213121412151216121712181219122012211222122312241225122612271228122912301231123212331234123512361237123812391240124112421243124412451246124712481249125012511252125312541255125612571258125912601261126212631264126512661267126812691270127112721273127412751276127712781279128012811282128312841285128612871288128912901291129212931294129512961297129812991300

1            44.    The method of claim 1, further comprising applying a continuous stream of  
2    one or more of a gas selected from the group consisting of N<sub>2</sub>, CO<sub>2</sub> and Ar in addition to  
3    said continuous stream of O<sub>x</sub>.

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